WE CLAIM:

1. An apparatus for improving immunity from transient events in a shunt circuit that includes a control terminal, the apparatus comprising a protection circuit that is arranged to couple a fast transient signal to the control terminal in response to a fast transient event such that the shunt circuit is activated in response to the fast transient signal and the shunt circuit is protected from the fast transient event.

2. An apparatus as in claim 1, the protection circuit further comprising a capacitance circuit that is arranged to couple the fast transient signal from a regulated power supply terminal to the control terminal in response to the fast transient event, wherein the fast transient event causes a fast transient voltage to occur at the regulated power supply terminal.

3. An apparatus as in claim 1, the protection circuit further comprising a resistance circuit that is arranged between the control terminal and a circuit ground terminal such that a potential drop develops across the resistance circuit in response to the fast transient signal, and the potential drop activates the shunt circuit such that the shunt circuit is protected from the fast transient event.

4. An apparatus as in claim 1, the shunt circuit further comprising a field effect transistor that is arranged to couple power from a power supply terminal to a circuit ground terminal in response to a control voltage that is associated with the control terminal, wherein the protection circuit is arranged to couple the fast transient signal to the gate of the field effect transistor in response to the fast transient event such that the field effect transistor is activated and a fast transient voltage associated with the power supply terminal is discharged to the circuit ground terminal.

5. An apparatus as in Claim 4, the protection circuit further comprising:

a capacitance circuit that is arranged to coupled the fast transient signal from the power supply terminal to the control terminal; and

a resistance circuit that is arranged to produce the control voltage in response to the fast transient signal.

6. An apparatus as in Claim 5, wherein an effective resistance of the resistance circuit and an effective capacitance of the capacitance circuit determine a signal level and an associated fast transient response time of the fast transient signal.

7. An apparatus as in claim 6, wherein the resistance circuit is included in an error amplifier circuit that is arranged to provide the control signal to the control terminal, wherein the error amplifier circuit has an associated amplifier transient response time that is slower than the fast transient response time such that the capacitance circuit provides a signal path to the control terminal that responds to the fast transient event before the error amplifier circuit can react.

8. An apparatus as in claim 1, the shunt circuit further comprising a plurality of field effect transistors that are arranged to couple power from a power supply terminal to a circuit ground terminal in response to a control voltage that is associated with the control terminal, wherein the protection circuit is arranged to couple the fast transient signal to each gate of each of the plurality of field effect transistors in response to the fast transient event such that each of the plurality of field effect transistors is activated and a fast transient voltage associated with the power supply terminal is discharged to the circuit ground terminal.

9. An apparatus as in Claim 8, the protection circuit further comprising a plurality of capacitance circuits, wherein each of the plurality of capacitance circuits is arranged to cooperate with a corresponding one of the plurality of field effect transistors such that each corresponding one of the plurality of capacitance circuits couples the fast transient signal to the gate of the corresponding one of the plurality of field effect transistors.

10. An apparatus as in Claim 9, further comprising a resistance circuit that is arranged to produce a control voltage at the control terminal in response to the fast transient signal.

11. An apparatus as in Claim 9, further comprising a plurality of resistance circuits, each of the plurality of resistance circuits is arranged to cooperate with a corresponding one of the plurality of field effect transistors, wherein an effective total resistance of the plurality of resistance circuits is arranged to produce a control voltage at the control terminal in response to the fast transient signal.

12. An apparatus for improving electrostatic discharge protection in a shunt regulator comprising:

an error amplifier circuit that is arranged to produce a control signal at a control terminal in response to a reference potential and a potential at a power supply terminal, the error amplifier having an amplifier response time;

a capacitance circuit that is arranged to couple a fast transient signal to the control terminal in response to a fast transient ESD event that occurs at the power supply terminal;

a resistance circuit that is arranged to produce another control signal at the control terminal in response to the fast transient signal; and

a shunt circuit that is arranged to selectively couple power from the power supply terminal to a circuit ground terminal when activated, wherein the shunt circuit is activated by the control signal during normal operation and the shunt circuit is activated by the another control signal during the fast transient ESD event such that excess energy from the fast transient ESD event is shunted from the power supply terminal to the circuit ground terminal by providing the another control signal to the control terminal in a time interval that is shorter than the amplifier response time.

13. An apparatus as in Claim 12, wherein the shunt circuit includes a transistor that is arranged to selectively coupled power from the power supply terminal to the circuit ground potential in response to at least one of the control signal and the another control signal.

14. An apparatus as in Claim 12, wherein the capacitance circuit conducts a current during the fast transient ESD event, and the resistance circuit is arranged to produce a voltage drop in response to the current such that the voltage drop corresponds to another control signal.

15. An apparatus as in Claim 14, wherein the capacitance circuit and the resistance circuit are arranged to provide an RC time constant that corresponds to at least one mega-hertz in frequency.

16. An apparatus as in Claim12, further comprising a master ESD protection circuit that is arranged to produce an ESD detection signal, and at least one slave ESD protection circuit that is arranged to provide another discharge path from the power supply terminal to the circuit ground terminal in response to the ESD detection signal, whereby the master ESD protection circuit and the at least one slave ESD protection circuit provides protection to the shunt circuit from slow ESD transient events.

17. An apparatus for improving electrostatic discharge protection in a shunt regulator comprising:

a means for amplifying that is arranged to produce a control signal at a control terminal in response to a reference potential and a regulation potential, wherein the regulation potential is associated with a power supply terminal;

a means for coupling that is arranged to couple a fast transient signal to the control terminal in response to a fast transient ESD event that occurs at the power supply terminal;

a means for producing that is arranged to produce another control signal at the control terminal in response to the fast transient signal; and

a means for shunting that is arranged to selectively couple power from the power supply terminal to a circuit ground terminal when activated, wherein the shunt circuit is activated by the control signal during normal operation and the shunt circuit is activated by the another control signal during the fast transient ESD event such that excess energy from the fast transient ESD event is shunted from the power supply

terminal to the circuit ground terminal by providing the another control signal to the control terminal in a time interval that is shorter than the amplifier response time.

18. A method of protecting a shunt device in a shunt circuit regulator from a fast ESD event on a power terminal, comprising:

detecting the fast ESD event with a capacitance circuit;

providing a current through the capacitance circuit in response to the fast ESD event;

producing a potential in response to the current;

coupling the potential to a control terminal of the shunt device such that the potential activates the shunt circuit;

coupling power from the power terminal through the shunt circuit to the circuit ground potential when the shunt device is active such that the shunt device is protected from the energy produced by the fast ESD event.

19. A method as in claim 18, producing a potential further comprising coupling the current to a resistance circuit such that the current flows through the resistance circuit and produces a potential.

20. A method as in claim 19, further comprising:

detecting a slow ESD event on the power terminal with a master ESD protection circuit;

producing an ESD detection signal in response to the slow ESD event;

activating at least one slave ESD protection circuit in response to the ESD detection signal; and

providing a discharge path from the power terminal to the circuit ground potential through the at least one slave ESD protection circuit such that the shunt device is protected from the energy produced by the slow ESD event.